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ABSTRACT

This instructor's guide accompanies the self-paced student training modules on tilesetting, available separately as CE 031 564. Introductory materials include a description of the components of the pre-apprenticeship project, discussion of teacher's role in students' completion of the modules, and scope and contents of Phase 2 training. Each of the 24 modules are briefly summarized according to this format: number of new vocabulary words; goal; performance indicators; overview and suggestions; description of any assignment(s) and/or job sheet(s) and listing of materials, tools, and equipment necessary to complete them; and supplementary references. An annotated bibliography contains references for further study and/or clarification of a topic. (YLB)

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PRE-APPRENTICESHIP

PHASE 2 TRAINING
Instructor's Guide

Tilesetting

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Office of the President

July 27, 1981

On behalf of Lane Community College, I wish to express our pride and gratitude for the opportunity to participate in the development of the Pre-Apprenticeship training materials. We also wish to commend the Oregon Department of Education for its original concept and continued support; and, the Educational Linkages Component of the CETA Governor's Grant for funding.

The goals of this project are many, but none are more important than that of producing valid, understandable vocational curriculum material. We congratulate the tradespeople and production staff for thier accomplishments.

Finally, I recommend this material to anyone exploreing Pre-Apprenticeship as an entry into the vocational work world, with the hope and belief that it will go a long way toward producing skilled craftspeople who are dedicated to their work.

Sincerely,

Eldon G. Schafer

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Phase II

INTRODUCTION

This is the second phase of a designed multi-phase project of pre-apprenticeship study. Phase II begins in earnest the development of manipulative skills essential to the trade. It re-introduces and elaborates on many of the tools, materials and equipment set forth in Phase I, and introduces projects and assignments designed to build trade knowledge and trade manipulative skills.

The project consists of three major components:

1) INSTRUCTOR'S GUIDE, containing a brief summary of each of the trade modules, including the materials, tools and equipment necessary to complete the Job Sheets and/or Assignments; an annotated bibliography for further study and/or clarification of a topic.

2) Self-paced LEARNING MODULES for student study. The modules are designed to impart trade knowledge and skills to the student. Each module is comprised of the following:
   a) Cover Sheet--lists module title, goals, performance indicators
   b) Study Guide--gives directions for completion of module
   c) Introduction (optional)--explains why the module is important
   d) Vocabulary--lists and defines any new trade terms or technical words necessary for understanding the module's content
   e) Supplementary References--details where to go for further study
   f) Information--provides information and graphics covering the module's topic(s)
   g) Self Assessment (optional)--provides students an opportunity to test their comprehension
   h) Assignment (optional)--enables students to research further into the topic
   i) Job Sheet (optional)--lists materials and tools necessary to complete the tasks which are designed to develop manipulative skill
   j) Post Assessment (optional)--enables the instructor to test student comprehension

3) SURVIVAL or COPING SKILLS MODULES have been developed to promote

social skills development. These 43 modules elaborate on the topics introduced in Phase I and cover such topics as: Losing your Driver's License, Death in the Family, Divorce, Time Management, Buying a Home, Maintaining Credit, and other social skills which have a bearing on the quality of work life and personal satisfaction.

IMPLEMENTATION

It is essential during Phase II that the student develop the skills necessary to perform the tasks of the trade as outlined and demonstrated in the modules. For this reason, the instruction should be conducted by a skilled craftsperson from the trade or occupation who has the necessary teaching skills.

At the completion of Phase II, the trainee will have enough experience with the occupation to decide whether to continue with the training into Phase III, which will ultimately represent a career choice and entrance into apprenticeship.

Recommendations for successful module completion

This phase of pre-apprenticeship study requires the student to develop job skills which will enable him or her to be a productive worker or to decide against pursuing the trade as a viable career choice. To that end, the instructor should:

1) Realize that skill-building and development is dependent on repeated physical performance and self-confidence.

2) Provide a setting in which students are encouraged to develop skills at their own individual pace. Assessments are designed as tests of comprehension, not as tests of skills or trade abilities.

3) Coordinate the use of materials, tools and equipment so that each student can fulfill his or her potential.

4) Ensure that each student practices the trade skills in the accepted manner, and practices enough to develop skills to a professional trade standard.

5) Make arrangements for visitations (to stores, shops, jobsites, etc.) and ensure that students participate fully.

6) Grade or comment on individual Assignments and Assessments, to ensure students are aware of their progress.

7) Ensure that the trade skills and knowledge presented in one module are fully understood by the student before allowing him or her to continue to subsequent modules.

SCOPE

Trades developed for study in Phase II include:

Drywall	Bricklaying
Painting	Parts Counter
Plumbing	*Electrical
Floor Laying	*Welding
Plastering	*Auto Mechanic
Cement Finishing	*Carpentry
Tilesetting	

* Adapted from previously developed ILS material.

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MODULE TITLE: HISTORY AND SCOPE OF THE TRADE

NUMBER IN SERIES: 1st of 24

NEW VOCABULARY WORDS: 12

GOAL: The student will be able to identify the historical events which affected the development of the tilesetting trade. He or she will be able to explain why tile is considered a basic material for many types of construction. The student will also be able to identify the major processes used by tilesetters.

PERFORMANCE INDICATORS:

The student will complete a:

1. Self Assessment
2. Post Assessment

OVERVIEW AND SUGGESTIONS:

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

None

SUPPLEMENTARY REFERENCES:

The Brick and Tile Industry in Stark County, Ohio

Architectural Monographs on Tile and Tilework, nos. 1-7

MODULE TITLE: SAFE WORKING PRACTICES

NUMBER IN SERIES: 2nd of 24

NEW VOCABULARY WORDS: 19

GOAL:

The student will be able to explain the importance of on-the-job safety and good housekeeping.

PERFORMANCE INDICATORS:

The student will complete a:

1. Self Assessment
2. Assignment
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

For more impact, the instructor may show various safety movies. Discuss why accidents happen, basic safety equipment and safe use of all tools.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The assignment requires the student to define at least 2 of 5 listed accident causes.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

None.

SUPPLEMENTARY REFERENCES:

Standard First Aid and Personal Safety

Safety Education--Man, His Machines and His Environment, pp. 1-45, 111, 116

MODULE TITLE: THE MANUFACTURE OF CERAMIC TILE

NUMBER IN SERIES: 3rd of 24

NEW VOCABULARY WORDS: 21

GOAL: The student will be able to identify and explain:

1. The four main tile forming processes
2. What a "green" tile is
3. The firing process
4. Different tile shapes

PERFORMANCE INDICATORS:

The student will complete a:

1. Self Assessment
2. Assignment
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

Modules 3, 4 and 6 require a ceramic shop visit. Instructor may combine the three assignments in one visit, or may furnish class with various tiles to test and inspect.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The assignment requires the student to visit a ceramic shop and test 5 types of tiles to determine tile body hardness.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

None.

SUPPLEMENTARY REFERENCES:

Tile Engineering--Handbook of Design, pp. 7-27

The Manufacture of Brick, Tile and Kindred Products, Bulletin #19, pp. 4-9

MODULE TITLE: TYPES OF TILE

NUMBER IN SERIES: 4th of 24

NEW VOCABULARY WORDS: 15

GOAL:

The student will be able to identify and explain the use of common tiles.

PERFORMANCE INDICATORS:

The student will complete a:

1. Self Assessment
2. Assignment
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

Combine ceramic shop visit with Modules 3 and 6.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The assignment requires the student to visit a ceramic shop and identify tiles.

Requires: two different tiles from each of the following (12 total):

glazed interior tile

quarry tile

(natural unglazed)

(glazed)

(soft body-glazed)

ceramic mosaics (glazed and unglazed

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

None

SUPPLEMENTARY REFERENCES:

Tile Engineering, pp. 27-64

American Olean Ceramic Tile, 1980 Catalog

Dal-tile Presents an Adventure in Color, Form and Texture!, 1980 Catalog

MODULE TITLE: PORTLAND CEMENT MORTAR MIXES

NUMBER IN SERIES: 5th of 24

NEW VOCABULARY WORDS: 7

GOAL:

The student will be able to identify, explain the use of, and mix both wall and floor-type mortars.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Assignment
3. Job Sheet
4. Post Assessment

OVERVIEW AND SUGGESTIONS:

The instructor could combine the Job Sheet in this module with the Job Sheet of Module 10. Both require mixing cement mortar and could be combined for a one-session task/assignment.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The assignment requires the student to answer questions concerning the Job Sheet.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to practice mixing wall and floor mortar.

Requires: a 95-lb. bag of portland cement
large bucket
at least 8 buckets of sand
mortar box
mortar hoe
access to water
½ large bag of lime

SUPPLEMENTARY REFERENCES:

Tile Engineering, pp. 65-71

Tilesetting Workbook, pp. 29-32

MODULE TITLE: TILE ADHESIVES

NUMBER IN SERIES: 6th of 24

NEW VOCABULARY WORDS: 12

GOAL:

The student will be able to name and prepare the major types of tile adhesives.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Assignment
3. Job Sheet
4. Post Assessment

OVERVIEW AND SUGGESTIONS:

For assignment, combine ceramic shop visit with Modules 3 and 4. Have student keep data on each assignment for later reference and discussion.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The assignment requires the student to visit a ceramic shop and identify various types of tile adhesives.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the students to practice mixing thinset (thin-bed) mortar.

Requires: large clean bucket
sturdy mixing stick
access to water
thin-bed mortar

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 29-32

MODULE TITLE: BACKINGS

NUMBER IN SERIES: 7th of 24

NEW VOCABULARY WORDS: 10

GOAL:

The student will be able to identify, explain the use of and select the proper backing required for tilesetting applications.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Assignment
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

The assignment could be a "take-home" type, or the student could investigate the classroom areas, floors, walls and counter tops, etc. to determine their suitability as backings for ceramic tile.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The assignment requires the student to determine if certain surfaces would make good backings for ceramic tile application.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

None.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 34-37

1980 Handbook for Ceramic Tile Installations, pp. 1-32

MODULE TITLE: LAYOUT AND LEVELING TOOLS

NUMBER IN SERIES: 8th of 24

NEW VOCABULARY WORDS: 13

GOAL:

The student will be able to identify, select and explain the use of tools commonly used to lay out and level tilework.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Assignment
3. Job Sheet
4. Post Assessment

OVERVIEW AND SUGGESTIONS:

OPTIONAL: Supply the class with at least 3 different levels. Have the students check their accuracy in the class meeting area.

When practicing with the water level, make level marks in various rooms, around corners, etc. Have students do some things "wrong" so they can see the results.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The assignment requires the student to visit a building supply store and identify various types of levels and determine their accuracy.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to construct a story pole, make various angles using a square and practice using a two-person water level.

Requires: 1 long wood strip for story pole--straightedge
a tile (at least 6" x 6")
square
paper
water level, at least 20' long

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 38-43

MODULE TITLE: TILE CUTTING AND DRILLING TOOLS

NUMBER IN SERIES: 9th of 24

NEW VOCABULARY WORDS: 11

GOAL:

The student will be able to identify, select and use the correct tools needed to make tile cuts.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

Set up 3 stations: 1) tile cutting board, 2) nipper, 3) allow the students to use the rubbing stone on the tile cuts from stations 1 and 2.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to practice using a tile cutting board, nippers and rubbing stone.

Requires: 20 pieces of 4¼" x 4¼" tiles
tile cutting board
nippers
felt tip pen to mark tile
rubbing stone

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 44-47

MODULE TITLE: MORTAR TOOLS

NUMBER IN SERIES: 10th of 24

NEW VOCABULARY WORDS: 7

GOAL:

The student will be able to identify, select and use the common tools needed for mortar work.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

The instructor could combine the Job Sheet in this module with the Job Sheet of Module 5.

If the mortar stiffens up too soon, have the students practice with the scratcher before re-mixing.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to mix wall mortar and practice transferring it from mortarboard with the hawk and flat trowel, practice running scratcher through mortar, practice back-buttering. Requires: small mortar box, mortar hoe, large bucket, access to water, bucket of sand, 1/3 bucket cement, 1/3 bucket lime, mortarboard and stand, hawk , flat trowel, scratcher, pointing trowel, 4 pieces 4¼" x 4¼" tile, small amount of mastic, 12" x 12" piece of wood.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 48-53

MODULE TITLE: SPECIALTY TOOLS

NUMBER IN SERIES: 11th of 24

NEW VOCABULARY WORDS: 10

GOAL:

The student will be able to identify, select and explain the proper use of the specialty tools required for tilesetting.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

The instructor may wish to set up stations for the students where tool use can be practiced:

1. metal pipe cuts with hacksaw
2. wood cuts with handsaw
3. nailing wood--claw hammer
4. pulling nails-- "

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

Activities include: practice cutting metal pipe and scraps of wood, practice nailing pieces together, practice pulling nails out of wood.

Requires: claw hammer, hacksaw, handsaw, scraps of wood, scraps of metal pipe, 10 nails long enough to penetrate two pieces of wood.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 44-53

MODULE TITLE: ADHESIVE APPLICATION AND BEATING IN

NUMBER IN SERIES: 12th of 24

NEW VOCABULARY WORDS: 8

GOAL:

The student will be able to select, explain the uses of and demonstrate the use of the notched trowel, and will be able to beat tile in.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

The instructor may set the mosaics, wall and floor tile on the same backing for easy comparison (a 4' x 8' piece of cheap plywood) or there could be individual stations on smaller, separate backings.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to practice combing adhesive and setting tile.

Requires: 1/8" deep V-notched trowel, ¼" deep V-notched trowel or square notched trowel, 3/8" deep square notched trowel, bag thinset mortar, access to water, large bucket, margin trowel, suitable backings, rubber mallet, beating block, 2 to 4 sq. ft. 1" x 1" mosaics, 4 to 10 sq. ft. 4¼" wall tile, 4 to 10 sq. ft. 8" x 8" or 10" x 10" quarry tile, scrub brush and steel wool, broom and/or duster (to clean.)

SUPPLEMENTARY REFERENCES:

The Purpose of Using Different Notched Trowels

Tilesetting Workbook, p. 107

MODULE TITLE: GROUTS

NUMBER IN SERIES: 13th of 24

NEW VOCABULARY WORDS: 12

GOAL:

The student will be able to identify, select, explain the use of and prepare commonly used sanded and non-sanded grouts.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Assignment
3. Job Sheet
4. Post Assessment

OVERVIEW AND SUGGESTIONS:

This module, and modules 14 and 15 require a ceramic tile shop visit. The visits may be combined.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The assignment requires the student to visit a ceramic tile shop and identify different grouts and match with different tiles. Notes should be made for the instructor.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to mix dry-set grout.

Requires: clean bucket
suitable mixing stick or margin trowel
5 lbs. colored dry-set grout
access to water

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 54-57

1980 Handbook for Ceramic Tile Installation, pp. 7 and 10

MODULE TITLE: GROUT AND MORTAR ADDITIVES

NUMBER IN SERIES: 14th of 24

NEW VOCABULARY WORDS: 12

GOAL:

The student will be able to identify, explain the use of and select the proper additive for grouts and mortars.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Assignment
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

The instructor may combine the ceramic shop visit with the visits required in Modules 13 and 15.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The student is required to visit a ceramic tile shop to learn about different mortar and grout additives.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

None.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 30-31

1980 Handbook for Ceramic Tile, pp. 5-9

MODULE TITLE: SEALERS AND CLEANERS

NUMBER IN SERIES: 15th of 24

NEW VOCABULARY WORDS: 8

GOAL:

The student will be able to identify, explain the use of, select and apply commonly used sealers and cleaners.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Assignment
3. Job Sheet
4. Post Assessment

OVERVIEW AND SUGGESTIONS:

Combine the ceramic tile shop visit required by the Assignment with Modules 13 and 14.

For the Job Sheet, set up individual testing stations: 4 stations with 3 differently-sealed tiles.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The student is required to visit a ceramic tile shop and identify different sealers.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The student is required to seal tiles with 3 different types of sealers, compare them and answer questions.

Requires: silicone in spray can, liquid sealer (one- or two-coat type), oil-based sealer, 12 pieces of 6" x 6" unglazed quarry tile, 2 paint brushes (one for each of the liquid sealers), small amount of dark grout, small amount of masonry acid cleaner, dark-colored food dye, access to water.

SUPPLEMENTARY REFERENCES:

None.

MODULE TITLE: EXPANSION JOINTS

NUMBER IN SERIES: 16th of 24

NEW VOCABULARY WORDS: 10

GOAL:

The student will be able to explain when and where to use expansion joints, and how to install them.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

The tiles with ¼" and ½" joints can be set on the same piece of backing material for easy comparison.

Seal a 4" joint section at a time to get the feel for it.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to practice caulking and sealing joints.

Requires: 8 pieces of same size tile, cartridge of colored silicone caulking sealant, caulking gun, 4' x 4' piece of backing material (plywood, sheetrock, etc.), tile adhesive to bond tile to backing, denatured alcohol, toilet paper or rags, notch trowel, margin trowel.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 61-70

1980 Handbook for Ceramic Tile Installation, p. 28

MODULE TITLE: TILE LAYOUT

NUMBER IN SERIES: 17th of 24

NEW VOCABULARY WORDS: 6

GOAL:

The student will learn the importance of good tile layout, how tile layouts are planned, how showers are squared, and how to use a diagonal layout.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

Topics include: planning the layout for square, patterned and hexagonal tiles; centering tile and setting diagonal tile.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to lay a diagonal tile pattern on a selected backing.

Requires: tile cutting board, backing (from 2' x 2' to 4' x 4' in size), appropriately sized notch trowel, tape measure and pencil, enough 4¼" x 4¼" tile to cover backing, tile adhesive, margin trowel, bucket (if using thinset mortar), beating block and mallet.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 95-100, 112-113, 119-121.

MODULE TITLE: HOW TO GROUT

NUMBER IN SERIES: 18th of 24

NEW VOCABULARY WORDS: 4

GOAL:

The student will be able to properly select and apply grout to different types of tile, and clean the job properly.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

The instructor may set up 4 different stations. It's possible to do one station at a time, setting the tile, then grouting after tile is bonded; or set the tile in all four stations first, then grout, using the different methods.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to set different types of tile with different widths of joints, grout with different grouts, using different methods.

Requires: 3/16" notch trowel, 3/8" notch trowel, enough tile adhesive for 33 sq. ft, margin trowel, tape measure, 4' straightedge, framing square, rubber grout float, access to water, 2 buckets, 4 pieces backing (1 each of the following dimensions: 36" x 36"; 26" x 26"; 51" x 51"; 14" x 26"), 16 tiles @ 4¼" x 4¼" ceramic wall, 16 tiles @ 3" x 3" glazed mosaics, 16 tiles @ 6" x 6" unglazed quarry, 9 4" x 8" x 1" pavers, sponge, white non-sanded grout, dark brown sanded grout, white silica sand, dark mortar sand, cement, polish cloth, burlap cloth, sawdust, 2 large pieces cheesecloth, grout bag, 1" dia. dowel.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 54-57

How to Install Ceramic Tile Counter Tops, pp. 5,7,11,14

MODULE TITLE: TUB ENCLOSURES

NUMBER IN SERIES: 19th of 24

NEW VOCABULARY WORDS: 10

GOAL:

The student will be able to install a ceramic tile tub enclosure, and be able to identify and explain 3 different backing methods.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

The instructor should locate a private home or public building that is in need of a new tub enclosure. Install tub enclosure. If it's a re-model job, the old tub enclosure will have to be removed and new water-resistant gypsum board installed. Make sure the plumbing is in good order.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to set and complete a standard W/R gypsum board tub enclosure.

Requires: tile cutting board, nippers, tape measure and pencil, 4' builders level, rubbing stone, margin trowel, pointing trowel, utility knife, razor blade scraper, 3/16" notched trowel, duster brush and pan, damp rag, caulking gun and tube of caulk, mastic to cover 50 sq. ft., white non-sanded grout, polish cloth, 48 sq. ft. 4¼" x 4¼" glazed wall tile, 64 pieces matching bullnose cap, 2 out corners, soap dish, 2 buckets, sponge, rubber grout float, access to water.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 101-116

Handbook for Ceramic Tile Installation- pp. 18-23

MODULE TITLE: COUNTER TOPS

NUMBER IN SERIES: 20th of 24

NEW VOCABULARY WORDS: 5

GOAL:

The student will be able to identify, explain and perform the main installation methods.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

The project may be completed in a student's home, your home, the teaching area, etc.

Any counter top that needs a new tile surface may be used. It does not have to be an adhesive-on-plywood installation.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to set and complete a small counter top.

Requires:(if mock-up, 2' x 4' x 3/4" exterior plywood)

8 sq. ft. counter top tile, tile for a two-tile-high backsplash, latex, acrylic or epoxy thinset mortar, 3/16" notched trowel, margin trowel, tile cutting board, nippers, 2 buckets, access to water, mastic for backsplash, grout, sponge, polish cloth, caulking gun and caulk, tape measure and pencil

SUPPLEMENTARY REFERENCES:

How to Install Ceramic Tile Counter Tops

Tilesetting Workbook, pp. 138-146

Handbook for Ceramic Tile Installation, p. 26

MODULE TITLE: SCREEDS

NUMBER IN SERIES: 21st of 24

NEW VOCABULARY WORDS: 6

GOAL:

The student will be able to identify, explain the purpose of, and set horizontal and vertical screeds.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

Combine this module with modules 23 and 24. It can be set up in several stages to make a complete project, such as a cement mortar shower, using the one-coat method. You may wish to use a real site. This can also be done to complete a mortar floor installation.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to set vertical and horizontal float strip screeds.

Requires: mortar box and mortar hoe, access to water, sand, cement, lime, two large (3½ gal.) buckets, 4 1/8" to 1/4" x 6' float strips, 6' wood straightedge, 4' builders level, rubber mallet, wood float, flat trowel, hawk, metal lath or wire mesh, staple gun and hammer and nails, tape measure.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 101-124

MODULE TITLE: FLOOR AND WALL INSTALLATION METHODS

NUMBER IN SERIES: 22nd of 24

NEW VOCABULARY WORDS: 7

GOAL:

The student will be able to identify, select and explain the use of commonly-used tile installation methods for floors and walls.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Assignment
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

If possible, have the class spend some time at a construction site. Several class meetings may be needed to observe all phases of work at the site.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

The Assignment requires the student to observe 3 different construction sites and decide which tile installation method to use for the largest floor and wall area at each site.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

None.

SUPPLEMENTARY REFERENCES:

Handbook for Ceramic Tile Installation, pp. 11-31

MODULE TITLE: APPLYING WALL AND FLOOR MORTAR

NUMBER IN SERIES: 23rd of 24

NEW VOCABULARY WORDS: 2

GOAL:

The student will be able to apply wall and floor mortar.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

Combine the wall mortar part of the Job Sheet in this module with modules 21 and 24. Do in stages to complete a project such as a cement mortar shower. It may be possible to complete the Job Sheet in a place that needs the work. Also, combine the floor mortar part with modules 21 and 24 to complete a cement mortar floor project.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to apply wall and floor mortar, using float strip screeds.

Requires: solid wall and floor backing, mortar box, mortar hoe, proper amounts of sand, cement and lime, 2 large buckets and access to water, mortarboard and stand, wood float, flat trowel and hawk, straightedges, float strips, metal lath and staple gun, 4' builders level, rubber mallet.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 101-124

MODULE TITLE: SETTING TILE TO CEMENT MORTAR

NUMBER IN SERIES: 24th of 24

NEW VOCABULARY WORDS: 2

GOAL:

The student will be able to set tile to cement mortar backings.

PERFORMANCE INDICATORS:

The student will complete:

1. Self Assessment
2. Job Sheet
3. Post Assessment

OVERVIEW AND SUGGESTIONS:

Combine the setting wall tile part of the Job Sheet with modules 21 and 23. Do in sequence to complete a project such as a cement mortar shower.

Combine the setting floor tile part with modules 21 and 23 to complete a cement mortar floor project.

ASSIGNMENT(S) DESCRIPTION AND MATERIALS REQUIRED:

None.

JOB SHEET DESCRIPTION AND MATERIALS AND TOOLS REQUIRED:

The Job Sheet requires the student to set tile to a wall and floor with a cement mortar backing.

Requires: mortar box and hoe, 2 large buckets, sand, cement, lime, access to water, mortarboard and stand, wood float and flat trowel, float strips, straightedges, 2' and 4' builders levels, rubber mallet and beating block, tape measure, tile cutting board, 28 sq. ft. of tile, thinset mortar, 3/16" square-notch trowel, toothpicks, metal lath, staple gun, rub brick, duster brush, dry-set grout, sponge and cheesecloth.

SUPPLEMENTARY REFERENCES:

Tilesetting Workbook, pp. 101-124

BIBLIOGRAPHY

ARCHITECTURAL MONOGRAPHS ON TILE & TILEWORK
Rexford Newcomb
Associated Tile Manufacturers, Beaver Falls, PA
(1924)

Contains 14 different monographs covering the general subject of tiles and their uses through the ages. Each monograph covers tiles in various countries, styles and history. Many good color and black and white graphics showing tile structures. A good historical reference.

THE BRICK AND TILE INDUSTRY IN STARK COUNTY, 1809-1976
C. Harold McCollam
The Stark County Historical Society, Canton, Ohio
(1976)

Easy reading; a well-written, organized story of the people who built a successful brick and tile industry in Stark County, Ohio. It covers the earliest beginnings through the present day (1976).

1980 HANDBOOK FOR CERAMIC TILE INSTALLATION
Tile Council of America
Western States
(1980)

A good section on grouts and adhesives and many very good detailed graphics of various types of tile installations; has graphics of almost anywhere tile can be installed. A "must" handbook for anybody dealing with tile.

BIBLIOGRAPHY

HOW TO INSTALL CERAMIC TILE COUNTER TOPS
American Olean Tile Company
Lansdale, PA
(1980)

Covers methods and procedures of setting tile on counter tops. Each method has good illustrations. A very good "how to" pamphlet for setting tile.

THE MANUFACTURE OF BRICK, TILE AND KINDRED PRODUCTS
Clyde Smith
U.S. Dept. of Labor, Washington, D.C.
(1956)

A report on the hazards to workers employed in the manufacture of brick, tile and kindred products. Outdated, but contains some good safety precautions. Not recommended.

TILE ENGINEERING HANDBOOK OF DESIGN
Plummer & Wanner
Structural Clay Products Institute, Washington, D.C.
(1947)

This is a tile engineering handbook; principles remain the same today as when written. Contains some good graphics, but is designed for an engineer building with tile.

BIBLIOGRAPHY

TILESETTING WORKBOOK
California Dept. of Education
Sacramento, CA
(1975)

Designed to be used as a workbook for tilesetter apprentices in California. Contains many good graphics and nearly every phase of tilesetting, but is not a "bible" of tilesetting unless similar building codes and climatic conditions exist. Overall, a very good reference for students and instructors.

SAFETY EDUCATION--MAN, HIS MACHINES, AND HIS ENVIRONMENT
Worick W. Wayne
Prentice-Hall, Englewood Cliffs, N.J.
(1975)

Discusses accidents, prevention and industrial safety education. Points up possible injury situations so that they may be recognized.